

**NORTH CAROLINA DIVISION OF  
AIR QUALITY**

**Application Review**

**Issue Date:**

**Region:** Wilmington Regional Office  
**County:** Duplin  
**NC Facility ID:** 3100029  
**Inspector's Name:** Linda Willis  
**Date of Last Inspection:** 05/07/2018  
**Compliance Code:** 3 / Compliance - inspection

<p align="center"><b>Facility Data</b></p> <p><b>Applicant (Facility's Name):</b> Valley Proteins, Inc. - Rose Hill Division</p> <p><b>Facility Address:</b> Valley Proteins, Inc. - Rose Hill Division 469 Yellowcut Road Rose Hill, NC 28458</p> <p><b>SIC:</b> 2077 / Animal and Marine Fats and Oil <b>NAICS:</b> 311613 / Rendering and Meat Byproduct Processing</p> <p><b>Facility Classification: Before:</b> Title V <b>After:</b> <b>Fee Classification: Before:</b> Title V <b>After:</b></p>				<p align="center"><b>Permit Applicability (this application only)</b></p> <p><b>SIP:</b> 15A NCAC 02D .0503, .0516, and .0521 <b>NSPS:</b> 15A NCAC 02D .0524 – Subpart Dc <b>NESHAP:</b> NA <b>PSD:</b> NA <b>PSD Avoidance:</b> 15A NCAC 02Q .0317 <b>NC Toxics:</b> NA <b>112(r):</b> NA <b>Other:</b> NA</p>																																																			
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<b>Review Engineer:</b> Eric Crump	<b>Comments / Recommendations:</b>
<b>Review Engineer's Signature:</b>	<b>Issue</b> 05127/T26
<b>Date:</b>	<b>Permit Issue Date:</b>
	<b>Permit Expiration Date:</b>

## 1. Purpose of Application

Valley Proteins, Inc.- Rose Hill Division (hereafter referred to as “Valley Proteins”) is a rendering facility located in Rose Hill, Duplin County, North Carolina. The facility operates under Title V Permit No. 05127T25 which is set to expire on August 31, 2019. Valley Proteins has applied for renewal of their facility’s air quality permit. The renewal application was received on October 30, 2018, or at least nine months before the expiration date. Therefore, the existing permit shall not expire until the renewal permit has been issued or denied. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

Through permit application No. 3100029.18B, Valley Proteins included the following changes to the existing permit:

- Remove 40 CFR Subpart DDDDD requirements for Boiler ID No. ES-B7, a temporary boiler which is not subject to that regulation;
- Change the NO<sub>x</sub> emission factor for saleable fat combustion in boilers listed in Permit Conditions 2.1 A.5.d and 2.1 C.5.d to reflect the value determined in previously submitted stack test results;
- Remove the requirement for weekly mist eliminator inspections for the fat extraction process (Permit Condition 2.1 E.4.d(B)), because this process does not have a mist eliminator;
- Provide missing compliance dates for the initial boiler tune-up and one-time energy assessment in Permit Condition 2.2 D.1.d.i, and the deadline for the initial compliance demonstration in Permit Condition 2.2 D.1.d.ii; and
- Revise the raw material holding time limit language in Permit Conditions 2.2 A.1.i and j to be consistent with the holding time limit language in Permit Condition 2.2 A.1.e.

Valley Proteins has also submitted a 502(b)(10) change notification (application No. 3100029.19A), proposing to use propane as an alternate fuel in addition to natural gas in boilers ID Nos. ES-B8 and ES-B9. This change will be incorporated into the permit revision.

## 2. Facility Description

Valley Proteins is a rendering facility that processes inedible animal parts into animal meal, fats and oils. The plant is divided into two process areas: a “meat side” and a “feather side.”

Meat side: Offal and animal parts are dumped from trucks into a feed bin. A screw conveyor feeds the offal through a grinder, producing a uniform size feed material. Larger raw material (i.e. whole dead animals and larger pieces) are received into a separate pit and fed through a pre-grinder. The ground offal, blood and fat is then fed to two steam heated supercookers—an “old” cooker #1 (ES-1) and a “new” cooker #2 (ES-5). A “live steam” evaporator (ES-8) removes excess water from the cooked material, which then passes over a drainage conveyor through high pressure, high volume screw-presses to separate the fat oils from the protein cake. The liquid fat is centrifuged to remove any residual solids and is stored for sale or used as a fuel in the boilers. The remaining protein cake is ground in a finishing mill (one per cooker), screened and then sent to one of the three meal storage silos.

Vapors from supercooker ES-1 are vented to condensers (CD-18 and CD-1), a venturi scrubber (CD-17), and then to the boilers for incineration. Vapors from supercooker ES-5 are vented to condensers (CD-18 and CD-7), a venturi scrubber (CD-17), and then to the boilers for incineration.

Feather side: Chicken and turkey feathers consist largely of keratin, a protein that is indigestible to animals because it is cross-linked with cysteine. Feathers brought to the plant by truck are conveyed to a steam-heated hydrolyser (ES-2) which cooks the feathers in the presence of moisture to break down the cysteine.

From the hydrolyser, the treated feathers are dried in a steam-heated feather dryer (ES-3) and then ground in a finish mill grinder. The resulting meal is screened and sent to the feather meal storage silo. Vapors from the feather hydrolyzer and dryer are vented to condensers (CD-18 and CD-6), a venturi scrubber (CD-17). and then to the boilers for incineration.

Boilers: Five permanent boilers (ID Nos. ES-B2 through ES-B6) supply steam for the cooking/drying equipment at this facility. Boilers ES-B2 through ES-B5 are permitted to burn Nos. 2, 4, and 6 fuel oils, recycled equivalent No. 4 fuel oil, saleable fat, and natural gas. Boiler ES-B6 is only permitted for natural gas, saleable fat, and No. 2 fuel oil. In addition to supplying steam, boilers ES-B2 through ES-B6 also serve as thermal oxidizers controlling odors from non-condensable gases from the cookers, the feather hydrolyzer, the live steam evaporator, and the feather dryer that are routed to the boiler fireboxes. The boilers themselves have no controls. A temporary boiler (ID No. ES-B7) is included in the permit to serve in place of one of the other onsite boilers when necessary, but to date has never been brought on site. This temporary boiler is permitted to burn Nos. 2, 4, and 6 fuel oils, recycled equivalent No. 4 fuel oil, saleable fat, and natural gas.

Odor Control: When the boilers are unavailable to incinerate vapors from the rendering processes, the vapors are routed to a venturi scrubber (CD-8), and then to a packed bed scrubber (CD-10) that uses a chlorine dioxide (or equivalent) scrubbing solution to eliminate odors. An additional cross-flow scrubber (CD-11) controls odors from the fugitive room.

### 3. Application Chronology

September 19, 2014	Permit No. 05127/T23 issued to Valley Proteins, Inc. as a modification and Title V renewal.
January 16, 2015	DAQ receives 502(b)(10) change notification (Application No. 3100029.15A) from Valley Proteins to (1) increase size of shell and tube condenser (ID No. CD-1) and (2) reroute non-condensable gases to new venturi scrubber prior to treatment by thermal oxidizers or packed bed scrubber.
March 31, 2015	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared to be operating in compliance with all permit requirements
May 6, 2015	DAQ receives 502(b)(10) change notification (Application No. 3100029.15C) from Valley Proteins to replace two shell-and-tube condensers (ID Nos. CD-6 and CD-7).
September 9, 2015	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared to be operating in compliance with all permit requirements.
February 19, 2016	DAQ receives 502(b)(10) change notification (Application No. 3100029.16A) from Valley Proteins to reduce size of odor control device (shell and tube condenser, ID No. CD-1).
March 24, 2016	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared to be operating in compliance with all permit requirements.
September 7, 2016	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared to be operating in compliance with all permit requirements.
March 6, 2017	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared

to be operating in compliance with all permit requirements.

August 16, 2017	Valley Proteins submits air permit application No. 3100029.17B to DAQ to replace an existing 78.7 million Btu per hour (MMBtu/hr) low NOx burner on No. 2 fuel oil/saleable fat/natural gas-fired boiler (ID No. ES-B6) with a new 99.9 mmBtu/hr conventional burner with no NOx control.
September 18, 2017	Compliance inspection conducted by Russell Morgan III, WRO. Facility appeared to be operating in compliance with all permit requirements.
October 18, 2017	DAQ receives major modification/Prevention of Significant Deterioration (PSD) application No. 3100029.17C from Valley Proteins for construction of a new fat extraction process and two natural gas-fired boilers.
April 16, 2018	Permit No. 05127/T24 issued to Valley Proteins, incorporating the following applications: <u>No. 3100029.17B</u> : replacing existing 78.7 MMBtu/hr boiler (ID No. ES-B6) with a 99.9 mmBtu/hr burner. <u>No. 3100029.16A</u> : 502(b)(10) modification to replace 7,800 square foot (ft <sup>2</sup> ) shell-and tube condenser (ID No. CD-1) with a new 6,000 ft <sup>2</sup> shell-and tube condenser <u>No. 3100029.15C</u> : 502(b)(10) modification to replace control devices CD-6 and CD-7 with new shell-and tube condensers <u>No. 3100029.15C</u> : 502(b)(10) modification to update size of 4,800 ft <sup>2</sup> shell-and tube condenser (ID No. CD-1) to a new 7,800 square foot shell-and tube condenser and to reroute non-condensable gases to new venturi scrubber prior to treatment by thermal oxidizers or packed bed scrubber.
May 7, 2018	Compliance inspection conducted by Linda Willis, WRO. Facility appeared to be operating in compliance with all permit requirements.
June 12, 2018	Permit No. 05027/T25 issued to Valley Proteins for pre-construction approval for the fat extraction process and two natural gas-fired boilers.
October 30, 2018	DAQ receives permit renewal application No. 3100029.18B from Valley Proteins.
March 27, 2019	DAQ receives 502(b)(10) change notification (application No. 3100029.19A) from Valley Proteins proposing to use propane as an alternate fuel in addition to natural gas in boilers ID Nos. ES-B8 and ES-B9.
March 28, 2019	DAQ acknowledges receipt of 502(b)(10) change notification (application No. 3100029.19A) from Valley Proteins.
April 3, 2019	DAQ sends draft permit and application review to WRO and Valley Proteins for review and comment.
April 9, 2019	DAQ receives comments on draft permit and application review from WRO.
April 16, 2019	DAQ receives comments on draft permit and application review from Valley Proteins.

#### 4. Permit Modifications and Title V Equipment Editor (TVEE) Discussion

The following table summarizes changes to the Valley Proteins permit resulting from the permit renewal:

Page No.	Section	Description of Changes
Cover and throughout	---	Updated all dates and permit revision numbers
5	1	Removed MACT Subpart DDDDD requirement from Emission Source No. ES-B7. Changed description of Emission Source No. ES-B7 from “. . . boiler . . .” to “. . . temporary boiler . . .”).
6	1	Revised source description of boilers ID Nos. ES-B8 and ES-B9 to indicate that both boilers burn propane in addition to natural gas.
8	2.1 A	Revised source descriptions to clarify that boiler ID No. ES-B7 is a temporary boiler.
9	2.1 A.1.a, b, c	Inserted the phrase “that are discharged” after the phrase “Emissions of particulate matter”.
9	2.1 A.2.d, e	Changed the word “burned” to “fired”.
10-11	2.1 A.3.e	Updated formatting and language for paragraph e. Removed requirement to establish “normal” for boiler (ID No. ES-B7).
11	2.1 A.3.h	Replaced the word “observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 A.3.f and g above”.
11	2.1 A.4 2.1 A.4.a.iv 2.1 A.4.b 2.1 A.4.c	Changed the word “CONDITION” in heading to “CONDITIONS”.  Inserted the word “temporary” before “boiler (ID No. ES-B7). Removed “[15A NCAC 02D .0530]”.  Removed the phrase “found in Section 3”.  Replaced the words “the sulfur content of the fuel is not monitored and recorded” with “these records are not maintained.”
12	2.1 A.4.f	Deleted the words “semi-annual” and “acceptable to the Regional Air Quality Supervisor”. Added the phrase “given in Section(s) 2.1 A.4.c, d, and e above” after the word “activities”.
12	2.1 A.5 2.1 A.5.a 2.1 A.5.c 2.1 A.5.d 2.1 A.5.e	Changed the word “CONDITION” in heading to “CONDITIONS”  Inserted the word “temporary” before “boiler (ID No. ES-B7). Removed “[15A NCAC 02D .0530]”.  Inserted the word “temporary” before “boiler (ID No. ES-B7).  Changed the quantity “36.6 pounds” to “37.86 pounds”.  Deleted the words “semi-annual” and “acceptable to the Regional Air Quality Supervisor”. Added the phrase “given in Section 2.1 A.5.c and d above” between the words “activities” and “postmarked”.
13	2.1 B.1.a	Included both allowable emission rate limit equations from 15A NCAC 02D .0515(a)].

Page No.	Section	Description of Changes
14	2.1 B.1.c	Added source ID numbers CD-17, ES-B2 through ES-B6 and CD-10.
	2.1 B.1.f	Replaced the word “observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 B.1.c and d above”.
	2.1 B.2.a	Deleted “[15 NCAC 02D. 0521(d)]”.
14-15	2.1 B.2.c	Updated formatting and language for paragraph c.
15	2.1 B.2.e	Replaced the word “observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 B.2.c and d above”.
16	2.1 C.1.a	Added source ID number ES-B6.
	2.1 C.3.a	Deleted “[15 NCAC 02D. 0521(d)]”.
17	2.1 C.3.c	Added the heading “Monitoring [15 NCAC 02Q .0508(f)]”. Updated formatting and language for paragraph c.
	2.1 C.3.e	Replaced the word “observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 C.3.c and d above”.
	2.1 C.4.b	Added the sentence “These fuel oil sulfur limits apply at all times, including periods of startup, shutdown, and malfunction.”
	2.1 C.4.c	Added the sentence “The opacity standards apply at all times, except during periods of startup, shutdown, or malfunction.”
18	2.1 C.4.d	Deleted this paragraph.
	2.1 C.4.e	Redesignated as Section 2.1 C.4.d. Deleted the phrase “found in Section 3”.
	2.1 C.4.f	Redesignated as Section 2.1 C.4.e. Replaced the phrase “of this permit” with “above”. Inserted the phrase “in 2.1 C.4.e” between the words “described” and “above”. Added reference to 40 CFR 60.46c(e).
	2.1 C.4.g	Redesignated as Section 2.1 C.4.f. Changed the words “Section 2.1 C.4” to “Section 2.1 C.4.f above”.
	2.1 C.4.h	Redesignated as Section 2.1 C.4.g.
	2.1 C.4.i	Redesignated as Section 2.1 C.4.h. Updated formatting and language.
19	2.1 C.5.b	Deleted the phrase “found in Section 3”.
	2.1 C.5.e	Deleted the words “semi-annual” and “acceptable to the Regional Air Quality Supervisor”. Added the phrase “given in Section 2.1 C.5.d and e above” between the words “activities” and “postmarked”.
	2.1 C.6.a	Added the phrase “per consecutive 12-month period” after the word “dioxide”.
20	2.1 D, 2.1 D.1.a	Updated format for particulate matter regulations.

Page No.	Section	Description of Changes
21	2.1 D.1.f	Replaced the words “the observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 D.1.c and d above”.
22	2.1 D.2.c 2.1 D.2.e	Updated formatting and language for paragraph c. Replaced the words “observations” with the phrase “monitoring and recordkeeping activities given in Section(s) 2.1 D.2.c and d above”.
23	2.1 E.1.b	Deleted the phrase “found in Section 3”.
24	2.1 E.4.a	Changed “CF” to “CFR”.
25	2.1 E.4.d.i.(B)	Deleted requirement for weekly inspection of mist eliminator
26	2.1 F 2.1 F.1.a, c 2.1 F.2.a, c	Revised text to indicate that boilers ID Nos. ES-B8 and ES-B9 burn propane in addition to natural gas.
27	2.1 F.3.c 2.1 F.4.b	Revised text to indicate that boilers ID Nos. ES-B8 and ES-B9 burn propane in addition to natural gas.
28	2.2 A	Added hyphen between the words “Facility” and “wide.
29	2.2 A.1.b	Inserted comma and the word “when” between the words “The Permittee” and “processing”. Inserted “15 NCAC” between the words “with” and “.02D .0539”.
30	2.2 A.1.i  2.2 A.1.j	Replaced the phrase “maximum 24-hour storage time” with the phrase “maximum storage time limits in 2.2 A.1.e above” in the first sentence. Inserted the word maximum before the word “storage” in the second sentence.  Replaced the phrase “24-hour storage time limit” with the phrase “maximum storage time limits in 2.2 A.1.e above”.
31	2.2 A.1.i.ii	Inserted “15 NCAC” between the words “per” and “.02D .0539”.
34	2.2 C	Revised text to indicate that boilers ID Nos. ES-B8 and ES-B9 burn propane in addition to natural gas.
35-38	2.2 D.1	Updated to latest version of requirements for new boilers designed to burn gas 1 fuels only.
35	2.2 C.1.b	Revised text to indicate that boilers ID Nos. ES-B8 and ES-B9 burn propane in addition to natural gas.
36	2.2 C.1.g 2.2 C.2.a, b 2.2 D	Revised text to indicate that boilers ID Nos. ES-B8 and ES-B9 burn propane in addition to natural gas.
36	2.2 D 2.2 D.2.a	Removed boiler ID No. ES-B7 from 40 CFR 63 Subpart DDDDD requirements.
38-41	2.2 D.2	Updated to latest version of requirements for boilers designed to burn heavy liquid fuel with a heat input capacity of 10 million Btu per hour or greater.
39	2.2 D.2.d.i  2.2 D.2.d.ii	Added calendar date for completion of initial tune up and the one-time energy assessment.  Added calendar date for initial compliance requirements.



Page No.	Section	Description of Changes
41-45	2.2 D.3	Updated to latest version of requirements for existing sources designed to burn light liquid fuel with a heat input capacity 10 million Btu per hour or greater.
42	2.2 D.3.d.i	Added calendar date for completion of initial tune up and the one-time energy assessment.
	2.2 D.3.d.ii	Added calendar date for initial compliance requirements.
46-55	3	Updated General Conditions to version 5.3 dated August 21, 2018.

The following change was made to the Title V Equipment Editor (TVEE):

Changed description of boiler **ID No. ES-B7** (“Natural gas/No. 2 fuel oil/saleable fat/No. 4 fuel oil or on-specification recycled equivalent No. 4 fuel oil/ No. 6 fuel oil-fired boiler (29.3 million Btu per hour input)”) by inserting the word “temporary” between the words “oil fired” and “boiler”.

Changed description of boilers **ID Nos. ES-B8 and ES-B9** (“One natural gas-fired boiler (10.04 million Btu per hour heat input”) [NSPS Dc, PSD, MACT DDDDD]) by inserting the word and symbol “propane/” between the words “One” and “natural gas”.

## 5. Description of Changes and Estimated Emissions

Valley Proteins requested the following clarifications be made in the renewal of their Title V permit, and requested one change through a 502(b)(10) modification:

- A. *Boiler ES-B7 is a temporary boiler brought on site on an as-needed basis and should therefore not be subject to 40 CFR Subpart DDDDD per 40 CFR 63.7491(j).*

40 CFR 63.7491(j) states that “temporary boilers and process heaters as defined in this subpart” are not subject to this subpart. A review of past compliance reports confirms that boiler ID No. ES-B7 meets the definition of a temporary boiler; it has yet to be brought on site and is meant for use when one of the other on-site boilers does not function. DAQ concurs that Boiler ES-B7 is therefore not subject to the Subpart DDDDD requirements. This requirement will be removed from the permit.

- B. *The NO<sub>x</sub> emission factor for saleable fat combustion in boilers listed in Permit Conditions 2.1 A.5.d and 2.1 C.5.d should be 36.57 pounds per 1,000 gallons, based on previously submitted stack test results.*

There is an inconsistency in the current permit regarding the emission factor the Permittee must use to estimate monthly nitrogen oxide emissions from the combustion of saleable fat in on-site boilers, Permit Condition 2.1 A.5.d requires the Permittee to use 36.6 pounds of nitrogen oxides per thousand gallons (lb/1000 gal) of saleable fat as the emission factor for boiler ID No. ES-B7. However, Permit Condition 2.1 C.5.d requires the Permittee to use 37.68 lb/1000 gal as the emissions factor for boiler ID No. ES-B6. The Permittee has requested in the application that the emission factor be changed to 36.57 lb/1000 gal.

To determine the appropriate emission factor for saleable fat combustion, a July 27, 2001 memorandum by Wallace Pitts III, DAQ Stationary Source Compliance Branch was consulted. The memorandum documents DAQ review of a stack test report for an oil-fired boiler at a Valley Proteins facility in Wadesboro, NC. The test report establishes criteria pollutant emission factors for burning animal fat oil in pounds (lb) per MMBtu.

The emission factor for nitrogen oxide (NO<sub>x</sub>) from the test report is 0.293 lb/MMBtu. This test report was approved by DAQ, and satisfied compliance requirements for Valley Proteins to establish emission factors for criteria pollutants from animal fat combustion for several of its North Carolina facilities.

Using 128,601 Btu/gal as the average heating value for fat (determined from averaging fat samples at Valley Proteins facilities<sup>1</sup>):

$$EF_{NO_x} = \frac{0.293 \text{ lb}}{\text{MMBtu}} * \frac{128,601 \text{ Btu}}{\text{gal}} * \frac{1 \text{ MMBtu}}{10^6 \text{ Btu}} = 0.03768 \text{ lb/gal, or } 37.68 \text{ lb/1000 gal}$$

Therefore, 37.68 lb/1000 gal is the correct nitrogen oxide emission factor for firing saleable fat in the boilers at the Valley Proteins facility. The inconsistency in emission factors has been corrected in this permit renewal.

*C. Removal of weekly mist eliminator inspection requirement at the Fat Extraction Process (Permit Condition 2.1.E.4.d(B)) because the process does not have a mist eliminator.*

Further investigation of this issue revealed that the facility's fat extraction process includes a solvent air separation system that removes solvent from vent gases before it is discharged to the atmosphere by spraying the gases with cold mineral oil as they flow through the packing material. The mineral oil absorbs the solvent and the "de-solventized" gases are drawn off through a demister, or mist eliminator at the top. Valley Proteins has requested this requirement be removed from the permit because (1) the mist eliminator does not control hexane emissions; it only limits mineral oil loss from the system; (2) inspection requires a complete shutdown of the system, which is burdensome, and (3) the manufacturer of the solvent air separation system recommends annual inspection and cleaning of the demister. Since the demister is part of the solvent recovery system, and does not serve as an emissions control device, DAQ concurs with Valley Protein's recommendation. The weekly inspection requirement in the permit will be changed to an annual inspection and cleaning requirement per manufacturer's instructions, along with weekly monitoring of instrumentation. Continued compliance is expected.

*D. Include June 12, 2020 as the compliance date for the initial boiler tune-up and one-time energy assessment in Permit Condition 2.2 D.2.d.i, and December 9, 2021 as the deadline for the initial compliance demonstration in Permit Condition 2.2 D.2.d.ii.*

The current permit did not specify these dates, leaving a place holder (e.g. "no later than MM/DD/YYYY (i.e., three years after permit issuance date, fill this date in)" where actual dates should have been supplied. Actual calendar dates in accordance with 40 CFR 63.7495(c)(2) and 63.7510(e) have been included in the new permit.

*E. Revise the raw material holding time limit language in Permit Condition 2.2 A.1.i and j to be consistent with the raw material holding time limits specified in Permit Condition 2.2 A.1.e.*

Permit Condition 2.2 A.1.e establishes different raw material holding time limits for different types of raw material loads, in accordance with 15A NCAC 02D .0539, Odor Control of Feed Ingredient Manufacturing Plants, as implemented per Section 18(c) of State Law 2015-263. As specified in that law, feathers with only trace amounts of blood must be unloaded within 48 hours after being weighed upon arrival at the facility, used cooking oil in sealed tankers within 96 hours, and all other types of raw material not in sealed containers within 36 hours. However, the recordkeeping and reporting requirements in Permit Conditions

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<sup>1</sup> From an October 14, 2014 email from D.Grassik, Kleinfelder, Inc., to Matthew Haynes, District Environmental Manager, Valley Proteins, Inc.

2.2 A.1.i and j as written presume a 24-hour holding time limit for all types of raw material. Permit Conditions 2.2 A.1.i and j have been revised in this permit renewal to reflect the different raw material holding time limits for different types of raw material loads in the law.

*F. Allow the use of propane as an alternate fuel in addition to natural gas in boilers ID Nos. ES-B8 and ES-B9.*

This change to the permit was requested by Valley Proteins in a 502(b)(10) change notification (application No. 3100029.19A). As discussed below in Sections 8 and 9, boilers ES-B8 and ES-B9 are subject to two federal rules: the Maximum Achievable Control Technology (MACT) standard for Industrial, Commercial, and Institutional Boilers and Process Heaters, and the New Source Performance Standards (NSPS) for Small Industrial-Commercial-Institutional Steam Generating Units. Because both federal rules include propane in their definitions for natural gas, use of propane will not change the applicability or requirements for these boilers with regard to MACT or NSPS rules. This change would also not affect the applicability or requirements of current state regulations.

Boilers ES-B8 and ES-B9 each have 10.04 mmBtu/hr heat input. The following table provides a comparison of potential annual emissions from one of the boilers firing natural gas and propane, calculated using the NC DAQ Natural Gas Combustion Emissions Calculator (Revision N, 1/05/2017).

Pollutant	Potential Emissions, tons per year			Percent Emissions Increase from Switch to Propane
	Natural Gas	Propane	Emissions Increase from Switch to Propane	
PM <sub>10</sub>	0.0224	0.0225	0.0011	4.91
PM <sub>2.5</sub>	0.0185	0.0196	0.0011	5.95
Sulfur dioxide (SO <sub>2</sub> )	0.0259	0.0072	-0.0187	-72.2
Nitrogen oxides (NO <sub>x</sub> )	4.3113	6.2549	1.9436	45.1
Carbon monoxide (CO)	3.6215	3.6051	-0.0164	-0.453
Volatile Organic Compounds (VOC)	0.2371	0.4804	0.2433	103

While the largest percent increases in criteria pollutant emissions resulting from switching from natural gas to propane are for NO<sub>x</sub> and VOC, overall emissions of these two pollutants remain well below permit limits. Emissions of SO<sub>2</sub> and CO are actually reduced.

A comparison of potential annual hazardous air pollutant (HAP) emissions was conducted using the Minnesota Pollution Control Agency Boilers, Furnaces, and Space Heaters Air Emissions Calculator (p-sbap5-21, 2/13/19). For the limited number of HAPs included in the calculator, a switch from firing natural gas in the boiler to propane resulted in a reduction in HAP emissions such as formaldehyde, hexane, and benzene, which as shown in the table in the header page of this review were already emitted in very small amounts.

The overall impact of this permit revision should have no significant impact on facility emissions. Continued compliance is expected.

## 6. Regulatory Review

The following state regulations continue to apply to sources at the Valley Proteins facility:

- 02D .0503: Particulates from Fuel Burning Indirect Heat Exchangers
- 02D .0515: Particulates from Miscellaneous Industrial Processes
- 02D .0516: Sulfur Dioxide Emissions from Combustion Sources
- 02D .0521: Control of Visible Emissions
- 02D .0539: Odor Control of Feed Ingredient Manufacturing Plants

This permit renewal does not affect this status. Continued compliance is expected. All permit conditions have been reviewed and modified, if necessary, to the most current set of shell permit conditions.

## **7. Facility-Wide Air Toxics/Toxic Air Pollutants**

Under 02D .1100: Control of Toxic Air Pollutants, process equipment (**ID No. ES-FE1**), meal storage room equipment (**ID No. ES-FE2**) and process equipment fugitive losses (**ID No. ES-FG1**) at the Valley Proteins facility are subject to NC toxic air pollutant limits for n-hexane. This permit renewal does not affect this status. Continued compliance is expected.

## **8. NESHAP/MACT/GACT**

Because no MACT standard was promulgated for the process equipment, process equipment fugitive losses, or meal storage room equipment, a case-by-case MACT determination was made for these sources, under 15A NCAC 02D .1112: 112(G) Case by Case Maximum Achievable Control Technology. Emission limits and control measures were established under this rule to limit hexane emissions from these sources.

In addition, boilers ID Nos. ES-B2 through ES-B6, ES-B8, and ES-B9 are regulated under 40 CFR 63, Subpart DDDDD, National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. This permit renewal does not affect this status. The permit conditions have been updated in accordance with the current shell version. Continued compliance is expected. The permit was modified to remove the Subpart DDDDD requirements for boiler ES-B7, as discussed in Section 5.A above.

## **9. New Source Performance Standards (NSPS)**

In accordance with 15A NCAC 02D .0524, boilers ID No. ES-B6, ES-B8, and ES-B9 are subject to 40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. For ES-B6, the NSPS limits the amount of sulfur in fuel oil combusted to 0.5% sulfur by weight. It also limits visible emissions to 20% when burning natural gas or No. 2 fuel oil. For ES-B8 and ES-B9, the NSPS requires Valley Proteins to record and maintain records of natural gas usage on a monthly basis. This permit renewal does not affect this status. Continued compliance is expected.

## **10. New Source Review (NSR)/Prevention of Significant Deterioration (PSD)**

This facility is an existing PSD major stationary source. In a previous Title V permit revision, Valley Proteins opted to accept PSD avoidance conditions under 15A NCAC 02Q .0317, which establish the following emission limits for boiler ES-B6:

- NO<sub>x</sub> emissions: shall not exceed 40 tons per consecutive 12-month period.
- SO<sub>2</sub> emissions: shall not exceed 40 tons per consecutive 12-month period, and boiler operations while firing No.2 fuel oil and saleable fat shall not exceed 7,250 hours per consecutive 12-month period.

The permit renewal does not affect the facility's status with respect to PSD. Continued compliance is expected.

## **11. Risk Management Program (Clean Air Act, Section 112(r))**

40 CFR Part 68 establishes requirements for stationary sources that hold more than threshold quantities of regulated substances to develop a risk management plan (RMP), in accordance with Section 112(r) of the Clean Air Act. The RMP identifies the potential effects of a chemical accident, steps the facility is taking to prevent an accident, and emergency response procedures if an accident occurs.

This facility has not been subject to Risk Management Program requirements. This permit renewal does not affect this status.

## **12. Compliance Assured Monitoring (CAM)**

40 CFR Part 64 establishes requirements for compliance assurance monitoring (CAM). This rule applies to any pollutant specific unit that meets the following three conditions:

- the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- the precontrol potential emission rate for the unit exceeds either 100 tons per year for criteria pollutants, 10 tons per year of a single HAP, or 25 tons per year of multiple HAPs.

CAM was determined in a preceding permit review to not be applicable because potential pre-controlled emissions (particulate) were less than CAM thresholds. The permit renewal does not affect the facility's status with respect to compliance assurance monitoring (CAM). No new control devices have been added since the previous TV renewal.

## **13. Facility Emissions Review**

There will be no change in potential emissions from the Valley Proteins facility resulting from this permit renewal. The table in the header page of this review summarizes emissions for the facility after application of required emission controls.

## **14. Compliance Status**

The facility was last inspected on May 7, 2018 by Linda Willis of the Wilmington Regional Office. The facility appeared to be operating in compliance with all applicable requirements at that time. The facility has not been issued any Notices of Violation or Notices of Deficiency since the last permit renewal.

## **15. Public Notice/EPA and Affected State(s) Review**

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also, pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice is provided to the public under 15A NCAC 02Q .0521 above. There are no affected states or local programs within 50 miles of the Valley Proteins facility.

## **16. Other Regulatory Considerations**

No P.E. seal was required for Permit Application No. 3100029.18B.

A zoning consistency determination was not required for this permit renewal.

No permit fee was required for this permit renewal.

## **17. Recommendations**

The permit application for Valley Proteins, Inc. - Rose Hill Division located in Rose Hill, Duplin County, North Carolina has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 05127/T26.